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By Courier

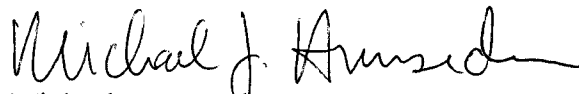
Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W. -- Room TWB-204
Washington, D.C. 20554

Re: *In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, CC Docket No. 01-338; CC Docket No. 96-98; CC Docket No. 98-147

Dear Ms. Dortch:

As part of AT&T's Comments April 5, 2002 in the above proceedings, AT&T submitted an econometric analysis performed by Professor Robert Willig, which showed that ILEC investment incentives have not been dampened by the Act's requirement that unbundled network elements be provided at cost-based rates. In order to assist other parties' understanding of that analysis, AT&T is submitting to the Commission a "Description of the Data And Econometric Processes Used In The Analysis Prepared By Professor Willig," as well as supporting documentation. The final page of the supporting documentation contains confidential material, and is being withheld from this submission. A copy of the analysis along with the confidential information is being submitted concurrently for filing under seal pursuant to the protective order in this proceeding.

Sincerely,


Michael J. Hunseder

Enclosures

cc: Janice Myles

DESCRIPTION OF THE DATA AND ECONOMETRIC PROCESSES USED IN THE ANALYSIS PREPARED BY PROFESSOR WILLIG AND FILED WITH AT&T'S APRIL 5, 2002 COMMENTS IN THE TRIENIAL REVIEW, CC DOCKET NOS. 01-338; 96-98; 98-147

The following provides the definitions of the variables used in the econometric regression analysis, the data sources for these variables, explanations as to why incomplete data prevented certain states from being included in the analysis, the equation specifications used for the tested economic relationships and the statistical results used to test the validity of these hypothesized relationships.

List of Variables

Variable	Legend
State	State (2-digit code)
avun9600	Average unemployment rate in state from 1996 through 2000
cost1	UNE-P rate in Zone 1 (includes non-recurring charges)
ln_0601	Ln(# of CLEC firms as of Jun 30, 2001)
pfire00	Share of employment in Finance, Investment and Real Estate (FIRE) in 2000
regform2	Price Cap regulation (0/1 dummy)
regform3	Price Cap w/ interim rate freeze regulation (0/1 dummy)
regform4	Rate freeze w/ non-index caps regulation (0/1 dummy)
regform5	Deregulated (0/1 dummy)
rev	Residential telecom revenue per line per month (state average)
telric	TELRIC of a residential UNE-P (state average)
tnpscp96	Net TPIS per capita in 1996
tsr	Total Service Resale (TSR) discount
xpop	Change in Population 1990-2000 (percent)
xtpn9600	Change in net TPIS 1996 - 2000, per capita (Pop2000)

Data Definitions and Sources

The data consist of a cross-section in which each observation is a separate state.

Data on ILEC investment by state (used to compute tnp SCP96 and xtpn9600) are collected from the FCC's ARMIS reports, which include data by state and by year for each of the major ILECs in Table 43-02 B6 Summary of Investment and Accumulated Depreciation.¹ From these data, a measure of the net capital at the end of 1996 and 2000 is constructed as the difference between the Total Plant in Service (TPIS) and the Accumulated Depreciation at the end of each year as follows:

$$Net\ TPIS = \frac{Total\ Plant\ in\ Service}{Accumulated\ Depreciation}$$

¹ The ARMIS reporting data are available on-line at <http://www.fcc.gov/wcb/armis/db/>.

The change in net TPIS is computed as the difference between net TPIS in 2000 minus net TPIS in 1996. The change in net capital (*i.e.*, net TPIS) is computed over the four year period to smooth out year-to-year variations in measured investment that may arise from differences in accounting and economic conventions for measuring capital. Finally, a calculation is made for net investment per capita, using the year 2000 population, as reported in the 2000 Census data² in order to measure ILEC investment relative to the size of the state. The measure of ILEC investment that is used in the econometric analysis is:

$$\text{Change Net TPIS per capita} = \left[\frac{\text{Net TPIS Year 2000} - \text{Net TPIS Year 1996}}{\text{Population Year 2000}} \right]$$

The equations in which ILEC investment is the dependent variable also include a measure of ILEC total plant in service per capita in 1996 to allow for the possibility that investment was affected by the level of capital in place in the initial year.

The average revenue per residential line (rev) in each state was computed by AT&T from data on the distribution of residential lines by density zone in the state, tariffed local service rates by density zone, average local minutes of use drawn from ARMIS data, and data on the use of vertical features and toll-related minutes of use drawn from the TNS Telecoms Bill Harvesting Study: 1Q01-3Q01.

The ILEC cost of investment (telric) is measured by the FCC's Synthesis Model for Universal Service for a state.³

Three variables are employed to proxy the various determinants of statewide demand for telecommunications services. First, the analysis includes each state's average unemployment rate over the four-year period from 1996 – 2000 (avun9600). These data

² The data on population, per capita income, and employment composition by state are from the 2000 Census as reported in the State Annual Tables that report State Economic Profiles (SA-3) which are produced by the Bureau of Economic Analysis of the U.S. Department of Commerce (September 2001). These data are available at <http://www.census.gov>.

³ The TELRIC estimate of the cost of the network platform (UNE-P) is derived from the FCC's Synthesis Model for universal service, adjusted to yield total switched local network costs. This model estimates the TELRIC for providing local telephone and access services. It includes a return for invested capital and an allowance for general overhead costs (*see Fifth Report and Order, In the Matter of Federal-Joint Board on Universal Service* (CC-Docket No. 96-45) and *Forward Looking Mechanism for High Cost Support for Non-Rural LECs* (CC-Docket No. 97-160), dated October 28, 1998. The model may be obtained from the FCC's website at <http://www.fcc.gov/ccb/apd/hcpm/>). The adjustments to the model to include costs for providing intraLATA toll and access services are explained in Ex Parte Presentation by AT&T to the Federal Communications Commission, *In the Matter of Application by Verizon New England, Inc. Bell Atlantic Communications, NYNEX Long Distance Company, and Verizon Global Networks to Provide In-Region InterLATA Services in Massachusetts*, CC Docket No. 01-9, dated February 1, 2001.

are obtained from the US government Bureau of Labor Statistics.⁴ Second, the analysis includes the rate of growth in population by state between 1990 and 2000 (xpop). This is calculated from population data obtained from the US Bureau of the Census.⁵ Third, the analysis includes the percentage of the labor force employed in finance, investment, and real estate in 2000 (pfire00). These data are available from the US Bureau of the Census.⁶

Data on the nature of the regulatory regime as it pertains to the major ILEC in each state are available from the National Regulatory Research Institute.⁷ This report characterizes the regulatory regime in each state as of October 2000 in one of five categories: 1) Rate of Return Regulation, 2) Price Cap Regulation, 3) Price Cap with Interim Rate Freeze, 4) Rate Freeze with Non-indexed Caps, and 5) Deregulation. For purposes of estimation, each state is assigned the regulatory form applicable to residential service provided by the major ILEC, and five indicator variables, one for each form, are constructed. The indicator variables, commonly called dummy variables, take on the value 1 in each state where that regulatory form prevails, and are zero elsewhere, with rate of return regulation taken to be the "omitted" dummy variable in the estimating equations.

The level of CLEC activity in each state is measured by the natural logarithm of the number of CLEC firms that are registered or licensed to operate there as of June, 2001 (ln_0601). These data are available for each state from the Federal Communications Commission.⁸

The extent to which state regulators have facilitated CLEC competition by implementing the pro-competitive provisions of the Telecommunications Act of 1996 is measured by two variables: tariffed price levels for UNE-P in the state, and the level of the Total Service Resale (TSR) discount. The UNE-P rate that is of greatest practical significance to the possibilities for CLEC entry is the Zone 1 (typically urban/suburban zone). These Zone 1 UNE-P rates (cost1) have been calculated by AT&T. AT&T also provided data on the TSR discount in effect in each state (tsr). These UNE-P and TSR data reflect the rates in effect for 2001.⁹

⁴ Unemployment figures from 1997, 98, 99, and 2000 for the state of Michigan are missing from the Bureau of Labor Statistics data.

⁵ See note 2, *supra*.

⁶ See note 2, *supra*.

⁷ The source of the data is from a table "Forms of Regulation for Basic Service in the U.S. States," from the State Telephone Regulation White Paper, National Regulatory Research Institute, as of October 2000.

⁸ Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission; Local Telephone Competition: Status as of June 30, 2001; February 2002; Table 8.

⁹ States may change their UNE rates and TSR discounts as a consequence of regulatory proceedings that are not coordinated across the states. Thus, because this analysis attempts to model investment behavior occurring across the 1996-2000 time period, the most useful UNE rate and TSR discount data would reflect the average levels of these variables that prevailed in a state across this entire time period. Unfortunately, we are not aware of a source for such average data.

Reasons for Incomplete Data

Because of missing data, not all of the continental states are included in the econometric analysis.¹⁰ Data on Zone 1 UNE-P prices were not available to AT&T for eight states: AL, CT, KY, SC, NV, TN, WI, and WV; and TSR data were not available for AR, CT, NV and NM. Because no CLECs were reported in DE, the variable *ln_0601* is undefined for DE. This observation is usable for the OLS reduced form specification, but must be omitted from the 3SLS structural form. Finally, the data on unemployment rates for MI were incomplete, as noted in footnote 4.

The data used in the filed analyses, the equation specifications, *Stata* command files and the econometric results are included the attached Zip file. AT&T's subsequent examination of these data has discovered that they included incorrect TSR discounts for AR (entry of 0.00%) and WY (entry of 5.12%), thus both of these entries should have been coded as "missing" for the empirical analysis. Had they been coded as intended, the regression results would not change appreciably.

¹⁰ HI and AK were left out because their primary ILECs were not RBOCs, and DC was left out because it is unlike the states in that it has a disproportionate number of government lines in its mix.

```

. /* Part I Define macros containing names of variables */;
. global Indep "pfire00 xpop avun9600";

. global ClecM "rev cost1 tsr";

. global IlecM "rev telric";

. global BothM "$ClecM telric";

. global Reg "regform2 regform3 regform4 regform5";

. global ClecDat "ln_0601";

. global IlecDat "xtpn9600 tnpscp96";

. reg $IlecDat $Indep $BothM $Reg;

```

Source	SS	df	MS	Number of obs =	38
Model	87327.9399	12	7277.32832	F(12, 25) =	12.83
Residual	14176.0661	25	567.042643	Prob > F =	0.0000
Total	101504.006	37	2743.35151	R-squared =	0.8603
				Adj R-squared =	0.7933
				Root MSE =	23.813

xtpn9600	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
tnpscp96	.0479933	.0421397	1.139	0.266	-.038795	.1347815
pfire00	481.1275	362.1344	1.329	0.196	-264.7024	1226.957
xxpop	291.4105	54.79869	5.318	0.000	178.5505	404.2706
avun9600	-5.254307	5.232241	-1.004	0.325	-16.03031	5.521694
rev	2.02015	1.637706	1.234	0.229	-1.352768	5.393067
cost1	-1.377363	.7074391	-1.947	0.063	-2.834361	.0796355
tsr	113.1172	89.67651	1.261	0.219	-71.57505	297.8094
telric	-3.409658	1.16822	-2.919	0.007	-5.815652	-1.003663
regform2	14.21681	14.12826	1.006	0.324	-14.88089	43.31451
regform3	25.42395	14.94178	1.702	0.101	-5.349215	56.19712
regform4	30.37401	18.69511	1.625	0.117	-8.129287	68.8773
regform5	-104.4046	31.29948	-3.336	0.003	-168.8671	-39.94215
_cons	-49.65926	71.30909	-0.696	0.493	-196.5231	97.20456

```

. reg3 ($IlecDat $ClecDat $Indep $IlecM $Reg)
> ($ClecDat $Indep $ClecM );

```

Three-stage least squares regression

Equation	Obs	Parms	RMSE	"R-sq"	Chi2	P
xtpn9600	37	11	19.76407	0.8546	220.7218	0.0000
ln_0601	37	6	.5053845	0.6282	63.50096	0.0000

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
xtpn9600						
tnpscp96	.0701128	.0363781	1.927	0.054	-.001187	.1414125

ln_0601		22.55254	8.779115	2.569	0.010	5.345792	39.75929
pfire00		27.18263	463.9255	0.059	0.953	-882.0945	936.4598
xpop		232.5556	44.43726	5.233	0.000	145.4602	319.651
avun9600		-5.100059	4.26823	-1.195	0.232	-13.46564	3.265519
rev		2.252487	1.45199	1.551	0.121	-.5933602	5.098335
telric		-3.371622	1.329592	-2.536	0.011	-5.977574	-.7656688
regform2		7.123677	12.64053	0.564	0.573	-17.65131	31.89867
regform3		22.91827	13.19877	1.736	0.082	-2.950838	48.78738
regform4		31.54539	15.27008	2.066	0.039	1.616583	61.4742
regform5		-106.5063	25.85077	-4.120	0.000	-157.1729	-55.8397
_cons		-72.16797	60.37268	-1.195	0.232	-190.4963	46.16031

ln_0601							
pfire00		16.97789	6.94145	2.446	0.014	3.372897	30.58288
xpop		1.81895	1.051565	1.730	0.084	-.2420796	3.879979
avun9600		.067812	.1018655	0.666	0.506	-.1318407	.2674647
rev		-.0384181	.0303019	-1.268	0.205	-.0978088	.0209727
cost1		-.0273738	.0133063	-2.057	0.040	-.0534538	-.0012939
tsr		7.158726	1.79243	3.994	0.000	3.645627	10.67182
_cons		.3202415	1.295364	0.247	0.805	-2.218626	2.859109

Endogenous variables: xtpn9600 ln_0601

Exogenous variables: tnp SCP96 pfire00 xpop avun9600 rev telric regform2
regform3 regform4 regform5 cost1 tsr

. log close;

```

version 6.0
#delimit ;
set more off;

capture log close;
log using "WilligProductionResults.log", replace;

/* Part I Define macros containing names of variables */;

global Indep "pfire00 xpop avun9600";
global ClecM "rev cost1 tsr";
global IlecM "rev telric";
global BothM "$ClecM telric";
global Reg "regform2 regform3 regform4 regform5";
global ClecDat "ln_0601";
global IlecDat "xtpn9600 tnpscp96";

reg $IlecDat $Indep $BothM $Reg;
reg3 ($IlecDat $ClecDat $Indep $IlecM $Reg)
      ($ClecDat $Indep $ClecM );

log close;

```